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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
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ART UNIT	PAPER NUMBER
2613	31

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/274,152	MCVEIGH ET AL.	
	Examiner	Art Unit	
	Tung T. Vo	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/17/03 has been entered.

It is noted that claims 1, 12, 18, 20, and 30 have been amended and claims 32-37 have been added, so claims 1-37 are pending in this application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueda et al. (US 5,175,618).

Re claims 1-37, Ueda discloses the same apparatus and method comprising a motion estimation circuit (74, 75, 76, and 77 of fig. 14) to receive a stream of data comprising at least an anchor frame and a predicted frame (fig. 10), and to utilize even parity field to unidirectionally predict content of each of a plurality fields of the predicted frame from corresponding fields of a temporally closet anchor frame in the stream of data, wherein the predicted frame comprises a frame (MEPG standard video data) that is defined as a bi-directionally predicted frame (B-frame, fig. 11) according to an encoding protocol for stream of data (see also col. 12, line 65 through col. 14, line 19, e.g. the inter-field/inter-frame motion compensation circuit (77 of fig. 14) performs inter-field motion compensation prediction and ***uni or one-direction motion compensation prediction***, and the prediction error signals (45b of fig. 14) and the input field images and the predicted images are coded in the transformation, quantization and coding means (78 of fig. 14)). Moreover, Ueda discloses the MPEG standard video data contains I, P, and B frames that includes odd and even fields are used for prediction (see entire patent as disclosed by Ueda).

4. Claims 1-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Igarashi et al. (US 5,666,461).

Re claim 12, Igarashi teaches an apparatus for encoding and decoding a video stream as shown in figures 3-8, where the apparatus comprises a motion estimation as motion detection (21 and 22 of figs. 3 and 4) to receive a video stream of data comprising at least an anchor frame (reference frame/image/picture) from the input and predicted frame from the motion

compensation (20 and 20' of fig. 3 and 4), the motion estimation is to utilize even-parity field prediction as shown in figures 5-8 to predict content of an even-field (EVEN of fig. 7), and odd field (ODD of fig. 7). Igarashi teaches various types of motion vectors used in the encoding and decoding apparatus field based motion prediction, the vector SMVI prediction, the vector MVoPo prediction (col. 9), where the motion estimation performs predicting content of an even-field of predicted frame from an odd-field of the anchor picture as the reference picture (col. 9, lines 24-51), particularly the vector MvoPe indicates prediction from an odd field of a reference picture to an even-field of a P picture, and the vector MVePo indicates prediction from an even field of a) reference picture (anchor frame) to an odd filed of a P picture (predicted picture), and motion estimation further performs predicting an odd-field of the predicted frame from even-field of the reference picture (col. 9, lines 51-65), where the frame/picture-based prediction of each macro-block is performed in detail as illustrated in figures 18A and 18B.

Furthermore, Igarashi teaches various types of motion vectors used in the encoding and decoding apparatus field based motion prediction, wherein the vector FMVeBe indicates prediction from an even field of a reference picture to an even field of a B picture, which means the utilizing even-parity field prediction to predict content of each of plurality of fields of the predicted frame from corresponding fields (col. 9, lines 39-42). Igarashi also suggests forward, backward and bi-directional predictions are used to predict B-frames, and wherein the motion compensated prediction of Igarashi (20' of fig.4) performs uni-directional prediction, which forward or backward prediction is performed (see also col. 22, lines 39-63) the forward or backward prediction is for the bi-directional frames, B-frames.

Re claims 13-17, Igarashi teaches where the anchor frame used either precede or

supercede predicted frame (P or B) depending on predicted frame type (TABLES 1-4), the motion estimation circuit measures activity within each of the plurality of fields of the anchor frame to generate a corresponding plurality motion vectors, and predicts content of a first in the predicted frame from content of a corresponding first field in the anchor frame, and a first field motion vector, and predicts contend of a second field in the predicted frame from corresponding second field and a second field motion vector performed by frame and field motion detection (21 and 22 of figures 3 and 4), where field-based and frame-based predictions as described (col. 7, lines 65 through col. 8, lines 1-15; TABLES 1-4), particularly figures 18A and 18B shows frame-based prediction of each macro-block. Igarashi further teaches the even-field interlaced video content of the predicted frame is predicted from even-from interlaced video content of the anchor frame, and odd field interlace video content of the predicted frame is predicted from odd-field interlace video content of the anchor frame (figs. 10A-10C), wherein the field motion detection (21 of figures 3 and 4) generates a motion vector for each of a first and second field of the predicted frame by measuring a sum of absolute activity differences in corresponding first and second field of the anchor frame (col.15, lines 9-35).

Re claims 1-11 and 20-31, since Igarashi teaches the motion estimation circuit for performing field and frame predictions of odd and even field of the anchor frame as described above, so the method claims 1-11 and 20-30 that are similar to the apparatus claims 12-17 are also anticipated by Igarashi.

Re claims 18, 19, and 31, Igarashi must have a storage medium having plurality executable instructions causing the motion estimation circuit to perform field and frame

predictions of odd and even field of the anchor frame as described above. See the analysis above claims 12-17.

Re claims 32-37, Igarashi further teaches the apparatus and method wherein is encoded according to Motion Experts Group (MPEG) standard for video data (fig. 1); and wherein the predicted frame is a B-frame and the anchor frame is one of an I-frame or a P-frame (col. 27, lines 37-45).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iu (US 5,293,229) in view of Ueda et al. (US 5,175,618).

Re claims 1-37, Iu discloses an apparatus (fig. 1) comprising a motion estimation circuit (32) to receive a stream of data (22, 28, 30) comprising at least an anchor frame (col. 8, lines 63) and predicted frame (P), and to utilize even-parity file prediction, odd and even fields (figs. 2 and 3) to predict content of each of a plurality of fields of the predicted frame from corresponding fields of the anchor frame, where the anchor frames, I0 and I1, are used to predict the even field of the next anchor frame, P6. To predict the odd field, P7, of the next anchor frame however, I1 and P6 are used not I0 and I1; wherein the anchor frame used either precedes or supersedes the predicted frame depending on predicted frame type (col. 8, lines 13); wherein the motion

estimation circuit measures activity content within each of the plurality of fields of the anchor frame to generate a corresponding plurality of motion vectors (col. 8, lines 18-21); wherein the motion estimation circuit predicts content of a first in the predicted frame from content of a corresponding first field in the anchor frame and a first field motion vectors, and predicts content of a second field in the predicted frame from a corresponding second field and a second field motion vector (col. 8, lines 58-65); wherein motion estimation circuit (32) generates a motion vector for each a first and second field of the predicted frame by measuring a sum of absolute activity differences (col. 8, lines 13) in a corresponding first and second field of the anchor frame.

Iu further teaches the event I and P fields are used as an anchor to predict an individual even predictive field, which means that the utilizing even-parity field prediction to predict content of each of a plurality of fields of the predicted frame from corresponding fields of the anchor frame (col. 8, lines 32-33); and MPEG standard comprises a reference frame, I or P frame as anchor frames (figs. 6 and 7). Moreover, Iu suggests the prediction of the odd and even fields (figs. 2, 3, and 4) of Iu to predict content of each of a plurality of fields of the predicted frame from corresponding fields of the anchor frame, where the anchor frames, I0 and I1, are used to predict the even field of the next anchor frame, P6. To predict the odd field, P7, of the next anchor frame however, I1 and P6 are used not I0 and I1. Moreover, Ueda suggests wherein the predicted frame and anchor frame comprises interlaced video content, wherein a first field of each of the predicted frame and the anchor frame contain even-field interlaced video content, while a second field of each of the predicted frame and the anchor frame contains odd-field interlaced video content (col. 4, line 5 through col. 5, line 25).

It is noted that Iu does not particularly teaches unidirectional or one directional prediction using a temporally closet anchor frames, the content fields of a predicted frame as claimed. However, Ueda teaches the inter-field/inter-frame motion compensation circuit (77 of fig. 14) performs inter-field motion compensation prediction and uni or one-direction motion compensation prediction, and the prediction error signals (45b of fig. 14) and the input field images and the predicted images are coded in the transformation using the temporally closet anchor frames (fig. 10, REFRENCE FRAME, ANCHOR FRAME). Therefore, taking the teachings of Ueda and Iu as a whole, it would have been obvious one of ordinary skill in the art to incorporate the unidirectional prediction (77 of fig. 14) of Ueda into the motion compensation apparatus of Iu for the same purpose of predicting the motion of B-frames in unidirectional. Doing so would reduce the coding efficiency by intra-frame coding and the amount of coding of the reference frame by inter-field prediction coding is performed as suggested by Ueda.

The combination of Iu and Ueda further teaches a storage medium comprising a plurality of executable instructions causes a executing processor to implement a motion estimation function as taught by Iu (21, 24, 32, 36, 48 of fig. 1) and (200 of fig. 2).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pearlstein et al. (US 6,061,400) discloses a method and apparatus for detecting scene conditions likely to cause prediction errors in reduce resolution video decoders and for using the detected information.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung T. Vo whose telephone number is (703) 308-5874. The examiner can normally be reached on 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris. Kelley can be reached on (703) 305-4856. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

T.Vo

Tung T. Vo
Examiner
Art Unit 2613